



محافظة القاهرة

# **SOLID WASTE MANAGEMENT SYSTEM COST MODEL FOR THE GOVERNORATE OF CAIRO USER'S MANUAL**

## **Prepared for:**

Governorate of Cairo, Egypt  
Egyptian Environmental Policy Program  
United States Agency for International Development

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## SECTION 1

### INTRODUCTION

The term “model” refers to a method whereby a proposed system can be tested using assumptions to derive estimates of performance without actually having to implement the system. This model consists of an Excel spreadsheet that derives operating cost estimates for a solid waste management system for the Governorate of Cairo.

The model is simple in terms of methodology. In execution, however, the model makes use of many independent variables, or “assumptions”, regarding operational data. These include such variables as inflation rate, population growth rate, interest rates, solid waste collection frequency, equipment needs, household and other user data, equipment costs, and labor rates. The results of this model produce “proforma”, or projected, income and expense data for operation of the solid waste management system. These data are used to estimate tariffs<sup>1</sup> needed for the Governorate to recover the costs of running a solid waste management system.

The model consists of an Excel workbook containing 10 worksheets. The worksheets in order are:

1. Assumptions
2. REV-Calc Fees
3. REV-Set Fees
4. Other Solid Waste Costs
5. Pricesheet
6. Consolidated
7. Collection CF
8. Med Waste CF
9. Industrial Collection CF
10. Capital Costs & Depr.

Data is entered into only five of the worksheets: **Assumptions, Price Sheet, REV Calc Fees, REV Set Fees, and Other Solid Waste Costs**. Once data have been entered into these five sheets, the model takes the data and “builds” cash flow statements for a 10-year forecast period (anticipated contract tenor)<sup>2</sup>. In doing this, the model self-calculates all expenses, including salaries, administrative expenses, and costs of fuel and maintenance. The model also determines capital expenses for the solid waste system operator, both initial and recurring, as the operator replaces depreciated equipment, and adds new equipment to account for growth. All monetary figures are in Egyptian pounds.

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<sup>1</sup> The term “tariff” is synonymous with User Fees, the fees that residential, commercial, and industrial waste generators will pay the governorate.

<sup>2</sup> This model assumes a 10-year forecast period. The model will need modification if different scenarios are required.

Once these data have been calculated, the model then “discounts” the future cash flows over the 10-year period to a “present value”<sup>3</sup> to show a worth of the enterprise to the operator.

Tariff estimates generated by the model are based on the currently popular method by which they will be added to electricity bills based on kilowatt-hour consumption. If another tariff collection system is contemplated, the model will have to be modified to reflect this.

It is important to keep in mind that models are used to produce estimates only. Models produce less reliable results as they forecast further out into the future. And, a model with as many variables as this one may produce decidedly different results with what may seem like only minor changes to variables or “scenario” building. Use this model to help guide decision-making. ***The model should not to be used as the sole basis for decisions.***

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<sup>3</sup> “Present value” is the lump sum worth of an investment made today that will yield a known amount of future cash flows when invested at a known rate of return. For example, the present value of an investment that will yield one future cash flow of LE133 if invested for three years at an annual rate of return of 10% is LE100.

## SECTION 2

### IMPORTANT INSTRUCTIONS FOR THE USER

It is important that before the user makes use of any of the model outputs, that all assumptions be thoroughly checked. The model makes use of a *Visual Basic* script (a form of programming repetitive tasks) that must be initiated manually. The script (or “macro” as they are sometimes called) automate repetitive calculations and minimize the chance of error that might occur had the user made these calculations manually.

The script occurs in the **Capital Costs & Depr.** worksheet. To initiate the script, a “button” must be clicked with the computer mouse in order to update the model. This “button” is entitled, “*Calculate CAPX and Depreciation*”. ***It is very important that this button be initialized*** before the user makes any reliance on the outputs of the model.

Once the users test this model and certain variables can be considered fixed (that is, unchanging), the number of assumptions can be reduced to make the model easier to use and to increase accuracy.

## SECTION 3

### INPUTS AND OUTPUTS OF THE MODEL

This section describes all inputs and outputs of the model. This is the essential instruction manual for the user.

***Data should only be entered in cells that are shaded in gray!*** Other cells are calculation cells. Additionally, the worksheets are “protected” so that users can only enter data into appropriate cells.

The existing data shown in Assumptions and Price List are based on estimates derived in 2002 and 2003 by the Egyptian Environmental Policy Program (EEPP) Solid Waste Technical Assistance (SWTA) Project. The user can change these data as appropriate based on more current information or needs. In the event that the user changes these assumptions, however, it is important that the model be saved under a different name in order to preserve the assumptions made by the SWTA. For example, if the user plans to run the model using different assumptions, the model should be saved under a different name. To do this, the user should go to the menus across the top of the spreadsheet, click on **File → Save As →** and enter a distinct name for the new model. Click **Save** and then proceed to data entry.

The information entered into each worksheet is discussed below.

#### ASSUMPTIONS WORKSHEET

The Assumptions Worksheet has several areas where information is entered. Each of these areas is discussed in this section.

##### Governorate and Financial Data

Governorate Data: Cairo (Southern Zo	
# of Households:	567,000
Persons per household:	4.11
Annual population growth rate:	1.90%
Governorate Collection % on Rates	90%

First, enter Governorate household demographic data. The current data are derived from CAPMAS estimates as well as Governorate estimates. The **Governorate Collection % on Rates**, is

the forecasted collection rate on billings. For example, if the Governorate expects that 10% of users will not pay their bills, then enter 90%.

Financial Data	
Pvt interest rate	14%
Loan terms (yrs.)	10
Local Inflation Rate	2.00%
Exchange rate (vs. US \$)	3.80
Cost of Capital (Discount Rate)	20.00%
Banding range for DCFs (+/-)	5.00%
Egypt marginal corporate tax rate	42%
Tax exemption	0%
Equity financed	30%
Debt financed	70%
Debt-equity ratio	2.33
Duty on purchase of foreign equipment	0%
Sales Tax	10%
Current Revenues from Cleansing Tax (annual)	20,000,000
Will Government Subsidize Tariffs?	No ▼
Management Fee (% of expenses & interest paid)	60%
Working Capital Ratio (as % of Total Revenues)	5%

Next, enter the financial data. **Pvt Interest Rate** is the interest rate on loans taken out by the operator to fund capital expenses. **Loan Term** is the number of years, or the amortization period, of the loans taken out by the operator. **Local Inflation Rate** is the anticipated rate of inflation (growth) over the modeling period. **Exchange rate** is the conversion rate reflecting the Egyptian pound against the U.S. dollar. **Cost of Capital** is the anticipated average

cost of capital for the operator. It is a reflection of the interest rate on loans as well as the cost of equity for the operator. This cost of capital is used as the discount rate for determining the value of the operation (net present value). **Banding range for DCFs** is the upper and lower range of discount rates. For example, if the cost of capital is entered as 20%, and the banding range at 5%, then the model will discount the future cash flows at 15%, 20%, and 25% to determine a net present value and an internal rate of return to the operator. **Egypt Marginal Corporate Tax Rate** is the income tax rate to be imposed on the operator's profits. **Tax Exemption** is the % of tax to be exempted by government authorities on the operator's profits (this is currently set at 0% and should be left unchanged until more information is known). **Debt:Equity ratio** is the anticipated mix of debt and equity the operator will employ in funding the concession. For example, if the operator anticipates borrowing 70% of his capital, then he will use equity to fund the remaining 30%. In this case, the ratio should be entered as 2.33 (70/30). **Duty on Purchase of Foreign Equipment** and **Sales Tax** are self-explanatory. Currently, it is anticipated that equipment purchased for solid waste management will be duty-free. **Current Revenues from Cleansing Tax** is the amount currently collected annually by the Governorate under the Cleansing Tax scheme. If Cleansing Taxes will not play a part in the modeling exercise, then enter "0". **Will Governorate Subsidize Tariffs?** is a "drop-down" menu. Click on the right of the box and the user will be presented with a choice of "yes" or "no". Select appropriate choice. (Currently, this is a "placeholder" and its use will have no effect on calculations. Future versions of the model will activate this function based on user feedback.) **Management Fee** is the "markup" to be employed by the operator in determining his fee. It is based on a percent of total expenses and interest paid by the operator. Currently set at 60% and should be left unchanged until further notice. **Working Capital Ratio** is the % of revenues to be set aside by the operator to be used as working capital during the year. Leave this unchanged until further notice.

## Residential/Commercial Collection Data

Assumptions for each component of the residential and commercial solid waste collection process are entered next. To view an explanation of the component, pass the cursor over the small red tab at the upper right corner of the green description box.

### Door-to-Door Collection--

In the first component, Door-to-Door (DTD) waste collection is addressed. There are two sections for this component, one for high-density areas, where normal sized trucks cannot fit, and the other for normal pickup in less densely populated areas of the city, but where DTD collection is still appropriate. The two sections are identical in the Model and data entry for both will be discussed together below.

First, enter in data for **Collection Frequency** (number of days per week collections will be made), **Number of Units** (apartments or flats), **Units per Crew per Day** (the number

High Density Pickup	<b>Unit-to-unit</b>		Baseline
	Collection Frequency		6
	Number of Units		150,000
	Units per crew per day		1,600
	Avg. waste per unit per day (kg)		4
	Set-out rate		100%
	Waste amount per unit per collection		5
	Effective hours of truck operation per day		8
	Number of Crews per day		94
	Avg. Crew size (day labor excluding drivers)		8
	Crew:Supervisor ratio		10
	Number of Supervisors		9
	Annual Labor Cost		5,433,293
	Number of Collection Vehicles		94
	Vehicle Type	1.5 ton Micro Truck	
	Reserve Vehicle Ratio (%)		5%
	Reserve Vehicles		5
	Total Vehicles in Fleet		99
	Annual Cost of Operating Vehicles		2,965,248
	Additions each year to vehicle fleet		
Normal Pickup	Types of containers	NONE	
	Number of Containers		94
	Additions each year of containers		

of units that a collection crew can service each day), **Average waste per unit per day (kg)** (the amount of unit waste per day), and the **Set-out rate** (the percent of units that will place their waste outside their doors for collection).

Next, enter **Effective hours of truck operation per day** (the number of hours collection vehicles will be operating per day), and the **Avg. Crew size** per truck (day laborers riding on each truck). Next, enter the **Crew Supervisor ratio** (the number of laborers to be supervised by each supervisor, for example, if 10 laborers are supervised by one supervisor, enter 10). Under **Vehicle Type**, click on the right side of the drop-down menu to see the list of available vehicles to be employed in this component of collections—select choice. Next, enter the **Reserve Vehicle Ratio**. If the operator should maintain a backup fleet equal to 5% of the working fleet of vehicles, enter 5. Finally, enter **Type of Container** using the drop-down menu. For the high-density area, no

Normal Pickup	<b>Unit-to-unit</b>		Baseline
	Collection Frequency		6
	Number of Units		100,000
	Units per crew per day		1,600
	Avg. waste per unit per day (kg)		4
	Set-out rate		100%
	Waste amount per unit per collection		5
	Effective hours of truck operation per day		8
	Number of Crews per day		63
	Avg. Crew size (day labor excluding drivers)		8
	Crew:Supervisor ratio		10
	Number of Supervisors		6
	Annual Labor Cost		3,640,666
	Number of Collection Vehicles		63
	Vehicle Type	Rear-loading compactor	
	Reserve Vehicle Ratio (%)		1%
	Reserve Vehicles		1
	Total Vehicles in Fleet		64
	Annual Cost of Operating Vehicles		4,792,320
	Additions each year to vehicle fleet		
Normal Pickup	Types of containers	NONE	
	Total Number of Containers		1600
	Additions each year of containers		

containers are anticipated (plastic bags will be used). Also in the areas where regular collection vehicles can operate and it might be possible for crews to use larger containers on wheels, plastic bags are still anticipated and thus, NONE is shown for containers. The other cells will self-calculate and derive expenses for the next 10 years (to the right of the entry cells).

### Building-to-Building Collection--

In the next component, Building-to-Building (BTB) waste collection is addressed. Again, there are two sections for this component, one for high-density areas, where normal sized trucks cannot fit, and the other for normal pickup in less densely populated areas of the city, but where DTD collection is still appropriate. The two sections are identical in the Model and data entry for both is discussed together. The information is entered in the same way as for DTD collection. The major difference is that larger containers can be used in areas with sufficient access.

<b>Building-to-Building</b>	
Collection Frequency	6
Units per building	20
# of households	150000
Number of Buildings	7500
Buildings per crew per day	250
Avg. waste per building per day (m3)	30
Waste amount per building per collection	35
Effective hours of truck operation per day	8
Number of Crews per day	30
Avg. Crew size (day labor excluding drivers)	2
Crew:Supervisor ratio	5
Number of Supervisors	6
Annual Labor Cost	733,824
Number of Collection Vehicles	30
Vehicle Type	Rear-loading compactor
Reserve Vehicle Ratio (%)	10%
Reserve Vehicles	3
Total Vehicles in Fleet	33
Annual Cost of Operating Vehicles	2,471,040
Additions each year to vehicle fleet	
Types of Containers	90 Gal. Container
Number of Containers per building	3
Total Number of Containers	22500
Additions each year of containers	



## Pooling Sites--

The next component addresses Waste Pooling Sites (WPS), where wastes from more than one building are taken to a conveniently located site for disposal into larger containers. Again the information is entered as in the previous examples.

<b>Pooling Sites</b>	
Collection Frequency	6
Number of Customers per pooling site	200
Number of customers in pooling site zones	50,000
Number of pooling sites	250
Sites per crew per day	20
Avg. waste per site per day (m3)	0
Waste amount per site per collection	0
Effective hours of truck operation per day	8
Number of Crews per day	13
Avg. Crew size (day labor)	3
Crew:Supervisor ratio	5
Number of Supervisors	2
Annual Labor Cost	148,013
Number of Collection Vehicles	13
Vehicle Type	Rear-loading compactor
Reserve Vehicle Ratio (%)	10%
Reserve Vehicles	2
Total Vehicles in Fleet	15
Annual Cost of Operating Vehicles	1,123,200
Additions each year to vehicle fleet	
Types of Containers	4 m3 container
Number of Containers per Pooling Site	2
Number of Containers	500
Additions each year of containers	

## Street Cleaning Data

In this section the user estimates needs for both manual and mechanical street sweeping (cleaning). Rather than make use of formulas to determine needs (i.e., street length to crew size), simple estimates are used. Under **Mechanical Sweeping Frequency**, enter the number of times each month a street will be swept.

<b>Street Cleaning</b>	
Avg. streetsweeping crew size (manual)	4
Number of Crews per day	227
Annual Labor Cost (manual)	5,439,283
Types of containers	Hand carts
Containers per crew	4
Number of Containers	908
Additions each year of Containers	
Number of Large Mechanical Sweepers	5
Reserve vehicle ratio	5%
Reserve vehicles	1
Total Large Mechanical Sweeper Fleet	6
Additions each year to Large Sweeper Fleet	
Number of Small Mechanical Sweepers	4
Reserve vehicle ratio	5%
Reserve vehicles	1
Total Small Mechanical Sweeper Fleet	5
Additions each year to Small Sweeper Fleet	
Mechanical Sweeping Frequency	8
Effective hours of Sweeper operation per day	8
Avg. Mechanical Sweeper Crew size (operator)	1
Annual Labor Cost (mechanical)	67,392
Annual Sweeper operating cost	624,000

## Industrial Collection

Assumptions for industrial waste collection are entered next. Remember, we are dealing with averages. Do not try and attempt to account for each and every type of industrial

site

Industrial Collections	
Number of Industrial sites (all types)	405
Avg. daily waste output per site (m3)	
Collection Frequency	3
Types of Containers	20 m3 container
Number of containers per Industrial site	1
Number of Containers	405
Additions each year of Containers	
Effective hours of vehicle operation per day	8
Sites per crew per day	4
Number of Crews per day	51
Avg. Crew size (day labor)	0
Crew:Supervisor ratio	5
Number of Supervisors	10
Annual Labor Cost	631,488
Number of Collection Vehicles	51
Vehicle Type	Rolloff truck
Reserve Vehicle Ratio (%)	20%
Reserve Vehicles	3
Total Vehicles in Fleet	54
Annual vehicle operating cost	2,426,112
Additions each year to vehicle fleet	

## Transfer Stations

This component allows for entering one and/or two types of transfer stations: a 200-ton per day (tpd) transfer station, and a 2,000-tpd transfer station. Enter the number of transfer stations needed. Enter the number of fedans of land needed for each transfer

Transfer Stations	
<b>200 TPD Transfer Station</b>	<b>4</b>
Land area (fedans)	1
Land lease cost (annual-10 yr. Lease)	-
Capital Cost	48,936,400
Supervisors per station	1
Heavy Equipment operators per station	3
Laborers per station	5
Transfer Vehicle	7
Total Operating Costs - Station	2,280,000
Total Operating Costs - Vehicles	1,747,200
Total Annual labor costs	694,886
<b>2000 TPD Transfer Station</b>	<b>-</b>
Land area (fedans)	5
Land lease cost (annual-10 yr. Lease)	-
Capital Cost	-
Supervisors per station	1
Heavy Equipment operators per station	6
Laborers per station	8
Transfer Vehicle	20
Total Operating Costs - Station	-
Total Operating Costs - Vehicles	-
Total Annual labor costs	-

station (if the operator will have to pay to lease the land, this contingency is accounted for). In this example, four 200-ton per day transfer stations are anticipated. Each transfer station will need approximately 1 fedan of land.

## Recycling/Composting Center

These entries are simple estimates. Most of the data used are taken from the SEAM project historical results.

Recycling/Composting Center	
Composting/recycling plant (150 tpd)	1
Number of Day laborers	20
Crew:Supervisor ratio	20
Number of Supervisors	1
Annual Labor Costs	174,720
Annual operating costs (est.)	300,000

## Landfill Construction and Operation

Rather than “drop down” menus, this component lists the types of vehicles and equipment needed because they are usually known. Capital costs to construct the landfill are entered in the Price Sheet worksheet and drive some of the calculations on this component.

Landfill Construction and Operation	
Number of Scalehouse workers	4
Number of Heavy Equipment Operators	10
Number of Day laborers	10
Number of Supervisors	3
Annual Labor Costs	259,680
Number of graders	2
Number of Compactors	2
Number of Dump Trucks	5
Number of Water Trucks	2
Number of Pick-up Trucks	2
Number of Front-end loaders	2
Number of Bulldozers	2
Daily operation (hrs.)	24
Days in operation	7
Annual Vehicle operating costs - Landfill	3,387,821
Landfill size (fedans)	150
Daily volume (TPD)	1000
Annual land lease cost	0

## Labor Rates

Here anticipated labor rates to be paid by the operator are entered. The benefits factor is the percentage of salary that constitutes the laborer’s bonus, health benefits, etc.

Administration as a percentage of labor constitutes the overhead cost associated with

Labor Rates	
Supervisors	EGP 50.00 per day
Heavy Equipment Operators	EGP 25.00 per day
Drivers	EGP 15.00 per day
Day Laborers	EGP 12.00 per day
Benefits factor (%)	60%
Administration as % of Labor (overhead,etc.)	20%
# of Workdays per week	6

maintaining the labor pool. This is a percentage of the labor rate and covers such items as office rent, administrative staff, etc.

## Medical Waste Collection and Treatment

Data entered here are simple estimates of needs. An incineration plant is assumed. Once better baseline data can be gathered for the number of sites and waste generated, more reliable formulas can be used to estimate needs.

### **Medical Waste Collection and Treatment**

Number of Hospitals	
Number of Clinics, Pharmacies	
Number of Collection vehicles	7
Effective hours of vehicle operation per day	8
Number of drivers	7
Crew:Supervisor ratio	5
Number of supervisors	1
Land area for treatment facility (fedans)	1
Capital costs-- treatment facility	3,800,000
Annual lease for treatment facility land	-
Annual labor cost	77,376
Annual vehicle operating cost	262,080

## Contract Monitoring Unit

These are the costs of maintaining a Contract Monitoring Unit (CMU). While the Governorate will run this unit, the costs still need to be included within the total system

<b>Contract Monitoring Unit (CMU)</b>		Unit mo.	Salary	Total	Annual
Chief of Monitoring and Evaluation	1	7000			84000
Zone manager	4	4000			192000
Fixed facility managers	5	1000			60000
Monitoring staff	150	450			810000
Engineers	2	1000			24000
Accountants	4	700			33600
Attorneys	2	700			16800
Administrative	10	250			30000
Public Relations Staff	10	450			54000
Monitoring and Complaint staff	20	450			108000
Total Annual Salaries					2,443,200
Administrative Expenses	50%				1,221,600
Public Relations Campaign					1,500,000

costs, so that they are covered by the tariff.

## PRICESHEET WORKSHEET

On this sheet, enter unit prices for the indicated items. Also, enter the depreciable life of each item. If a vehicle is expected to be replaced after 6 years of operation, enter 6 under Life. Next, enter the hourly cost of operation of each piece of equipment. This cost includes fuel, oils, and the cost of maintenance (including labor).

	Unit Price (LE)	Life	Operation cost* (per hr.)
NONE	0	11	
1.5 ton Micro Truck	60,000	11	12
Rear-loading compactor	250,000	11	30
Utility Truck (repairs, parts)	100,000	11	10
Large mechanical Sweeper	700,000	11	30
Small mechanical Sweeper	500,000	11	25
Motorcycle	1,500	11	3
Front-end loader (CAT 938G)	580,400	11	23
Windrow turner	627,000	11	
Automobile	60,000	11	8
Mini-Bus	150,000	11	15
Pick-up truck	76,000	11	10
Rolloff truck	280,000	11	18
Transfer Vehicle	350,000	11	20
Trailer	45,000	11	
Motor Grader (CAT 120H)	800,700	6	27.1
Compactor (CAT CS533C)	281,600	6	25
Dump Truck	250,000	11	25
Water Truck	240,000	11	15
Bulldozer (CAT D6R)	1,058,700	11	31.3
Medical waste collection vehicle	100,000	11	15
NONE	0	1	
Hand carts	500	4	
330 liter Container	270	4	
1 m <sup>3</sup> container	650	4	
2 m <sup>3</sup> container	800	4	
3 m <sup>3</sup> container	1,500	4	
4 m <sup>3</sup> container	2,000	4	
6 m <sup>3</sup> container	4,000	4	
12 m <sup>3</sup> container	6,000	4	
20 m <sup>3</sup> container	7,200	4	
40 m <sup>3</sup> container	8,000	4	
NONE			
25-Bay Garage	562,500	20	
Composting/recycling plant (150 tpd)	6,000,000	15	
200 TPD Transfer Station	12,234,100	11	
2000 TPD Transfer Station	24,207,900	11	
Medical waste treatment facility	3,800,000	11	
Landfill construction cost per fedan	80,000		
Landfill land lease cost per fedan (annual)	-		
Land lease for medical waste treatment site (per fedan)	-		

## OTHER SOLID WASTE COSTS WORKSHEET

Enter on this sheet other costs associated with managing all aspects of the solid waste management system. For Cairo, enter the contracted costs of managing the other three zones. These costs will be added to the costs derived by the model to present a consolidated picture for purposes of estimating tariffs.

## OUTPUT SHEETS

Once data have been entered into the above worksheets, go to the **Capital Costs and Depr.** worksheet and click on the button entitled "Calculate CAPX and Depreciation". The macro will be invoked and you will see calculation activity.

Next, go to one of two revenue/tariff worksheets: either the **REV-Calc Fees** or **REV-Set Fees**. These sheets take the anticipated operator fees to be paid by the Governorate and apply tariffs needed to cover these fees.

### **REV-Calc Fees Worksheet**

The REV-Calc Fees will calculate tariffs needed if a pre-determined government subsidy has been agreed to. In short, this sheet will add the stipulated government subsidy, the current revenues to the Governorate from Cleansing Taxes and then determine any surplus or shortfall after these revenues are applied to the operator's fee. In almost all cases, there will be a shortfall, and tariffs are then calculated based on a scale entered into the worksheet.

First, enter the "Burden as a % of Total" for each rate paying class. In this example, residential payers will cover 20% of all tariffs needed, Commercial enterprises will pay 33%, and all others will pay 47%. Next, enter the percentage of burden for each sub-class with each class. For example, under residential, type 1 users (poorest rate payers) will pay 2% of the total residential burden, type 2 will pay 6%, etc. The percentages to be paid by each sub-class should total 100% and that total should equal the Burden as a % of total. Also, enter in the total number of users for each class of payer.

The results of the model will be shown in the annual tariff estimates for the 10-year modeling range. Also, shortfalls/surpluses to the Governorate will be shown.

Residential	Type	Tariff	
		Users	Burden (%)
	1	764,513	2%
	2	964,037	6%
	3	440,830	9%
	4	146,772	11%
	5	40,770	29%
	6	33,000	43%
	Burden as % of Total		20%
Commercial	1	238,000	26%
	2	63,478	21%
	3	29,323	24%
	4	11,709	16%
	5	6,304	13%
	Burden as % of Total		33%
Small factories, offices, clinics		179,929	15%
Medium factories, workshops		8,533	26%
Large factories		706	45%
Government authorities		22,185	14%
	Burden as % of Total		47%
<b>Total Users</b>		2,950,089	

## REV-Set Fees Worksheet

On the REV-Set Fees worksheet, the user proposes a set tariff for each class of ratepayer. The worksheet then calculates the needed government subsidy if there are shortfalls in paying the operator's fees. Taken into account is the inclusion of the Cleansing Tax

Residential	Type	Users	Proposed Tariff/mo.
	1	764,513	1
	2	964,037	2
	3	440,830	3
	4	146,772	4
	5	40,770	10
	6	33,000	15
Commercial	1	238,000	2
	2	63,478	6
	3	29,323	15
	4	11,709	25
	5	6,304	40
Small factories, offices, clinics		179,929	20
Medium factories, workshops		8,533	50
Large factories		706	500
Government authorities		22,185	100
Total Users		2,950,089	

revenues if so desired. The user enters the number of ratepayers for each class under "Users" and the proposed tariff for each class. Tariffs are then projected out for the 10-year modeling period.

In both cases—for REV-Calc Fees and REV-Set Fees—the user has the option in the upper left corner of the sheet to choose whether to grow the model by inflation and/or population growth.

Adjust Tariffs for Inflation?	Yes	▼
Adjust Users by Population Growth?	Yes	▼

## PRINTING

Each sheet is set for printing. To print a sheet, go to that sheet, go to File→Print→OK.